

Sheet 1 of 15
 Title: DNA AND RNA CONFORMATIONAL SWITCHES AS
 SENSITIVE ELECTRONIC SENSORS OF ANALYTES
 Applicant: Sen, Dipankar
 Contact: Charles D. McClung
 Telephone: (503) 227-5631

10/507387

WO 03/076653

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FIGURE 1(a)

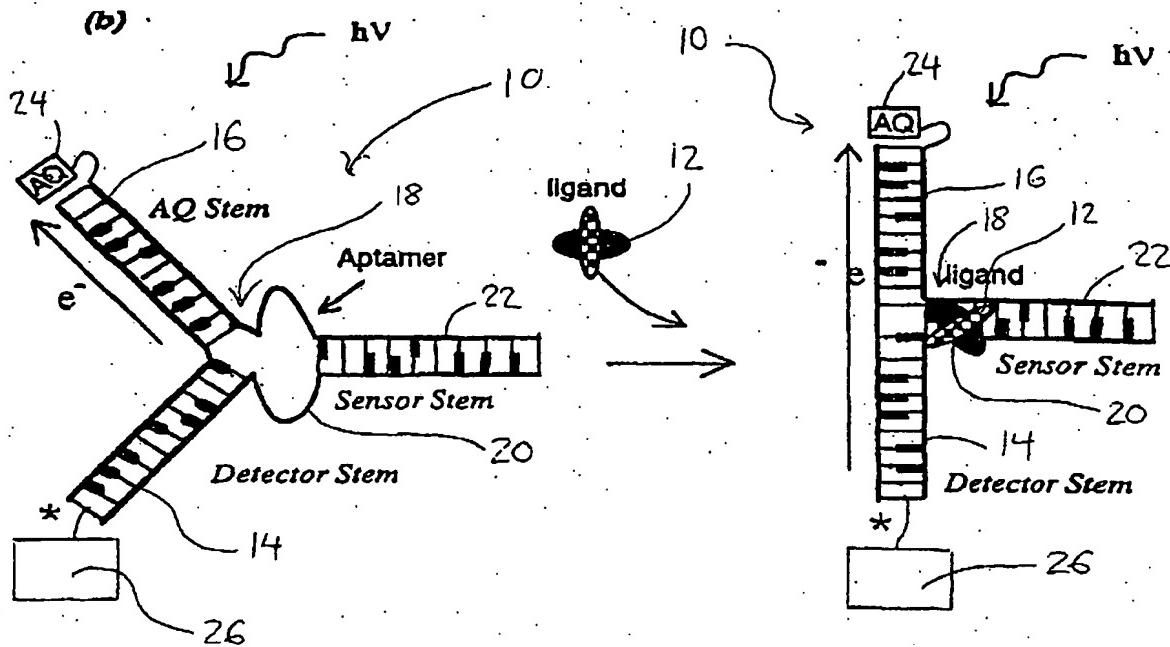
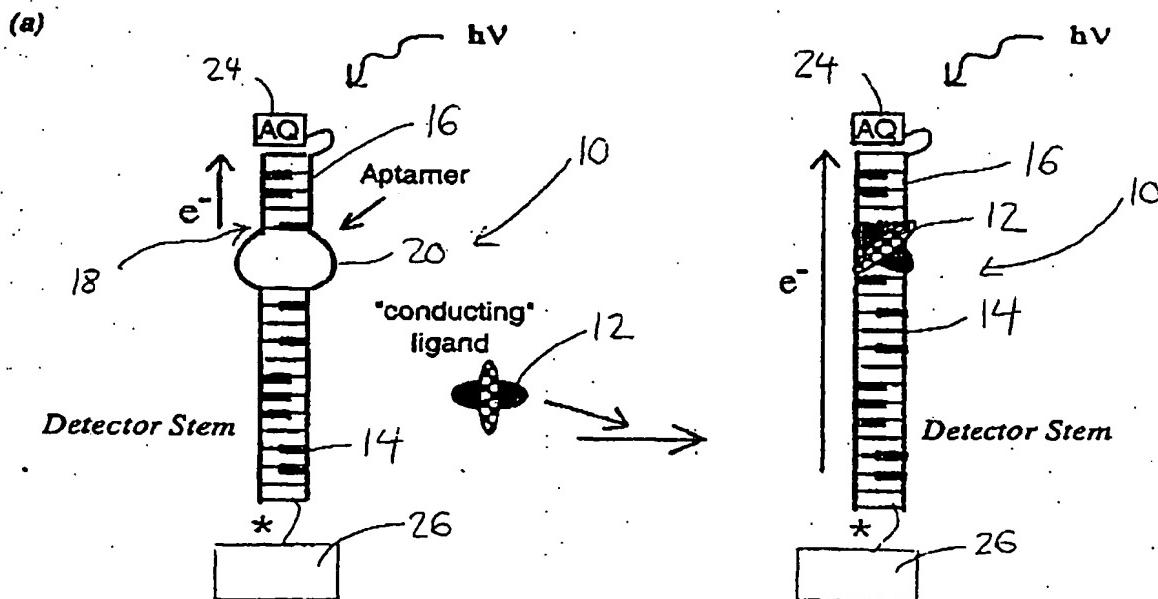


FIGURE 1(b)

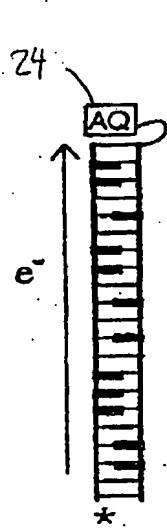
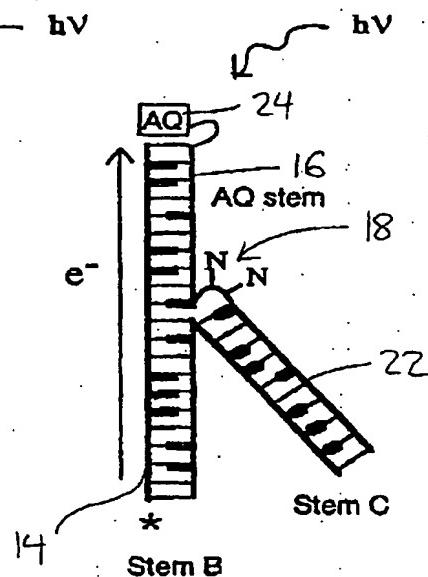
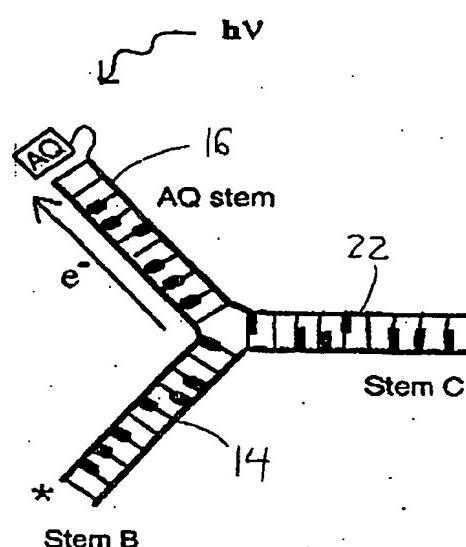


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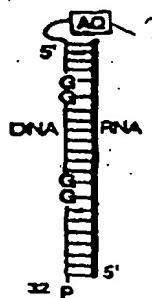
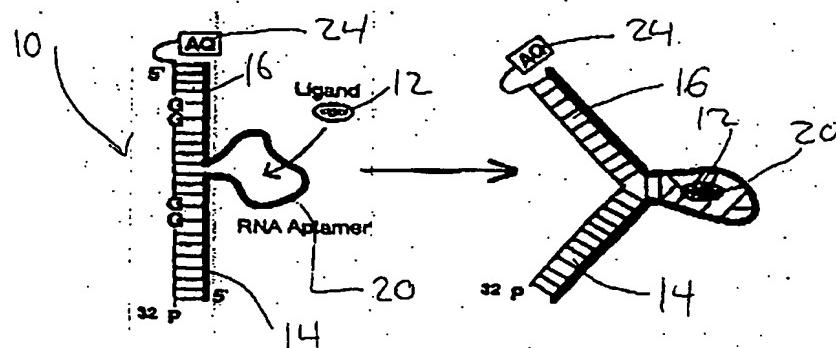
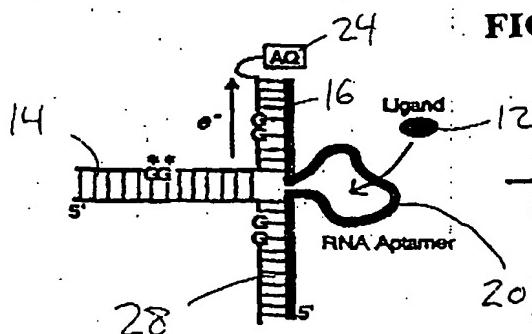
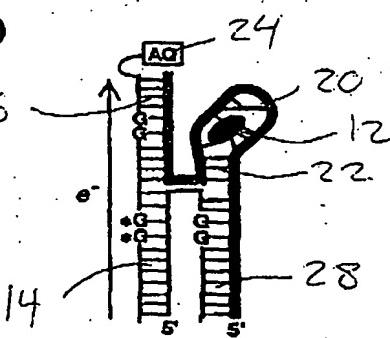
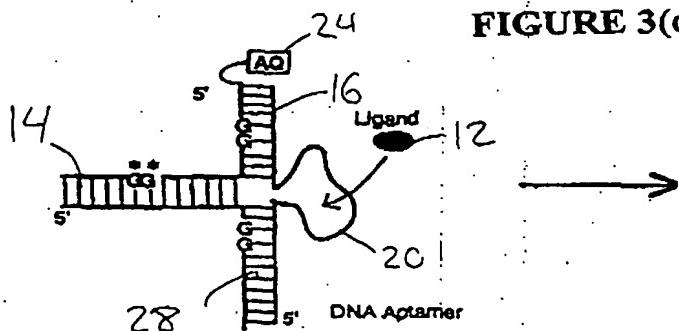
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FIGURE 2(a)**FIGURE 2(b)****FIGURE 2(c)**

Guanine bases are shown as dark stubs.

* designates a 5'-end labeled strand, which can be analyzed in a sequencing gel for damage to specific guanines concomitant with electron donation.

In panel (II) electrons flow from Stem B to the AQ stem; whereas, in panel (III) electron flow is restricted to the AQ stem.

FIGURE 3(a)**FIGURE 3(b)****FIGURE 3(c)****FIGURE 3(d)**

In (c) and (d), asterisks indicate guanines through which electron conduction may be expected to change subject to ligand binding to the ligand receptor/aptamer.

FIGURE 4(a).

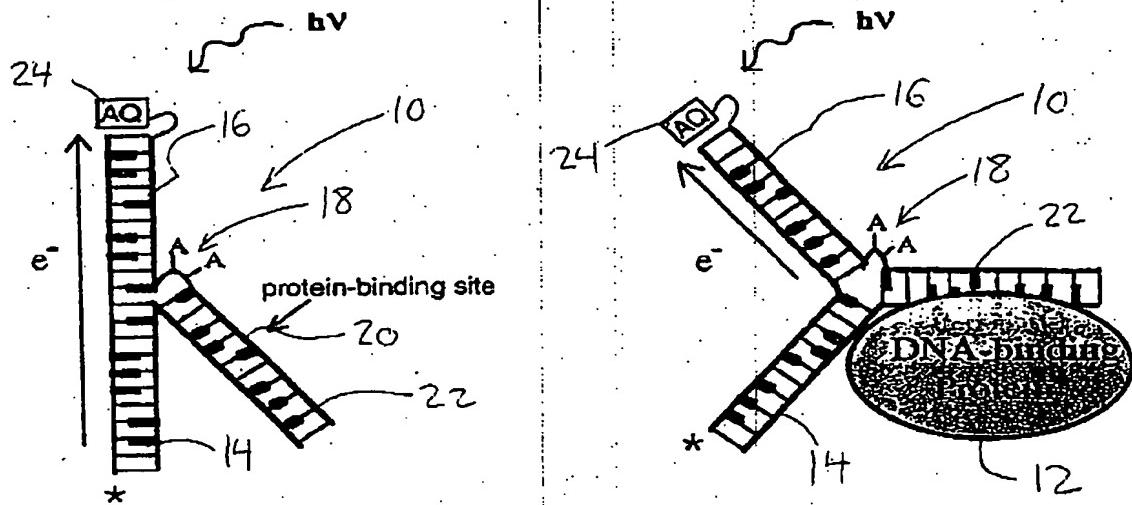


FIGURE 4(b)

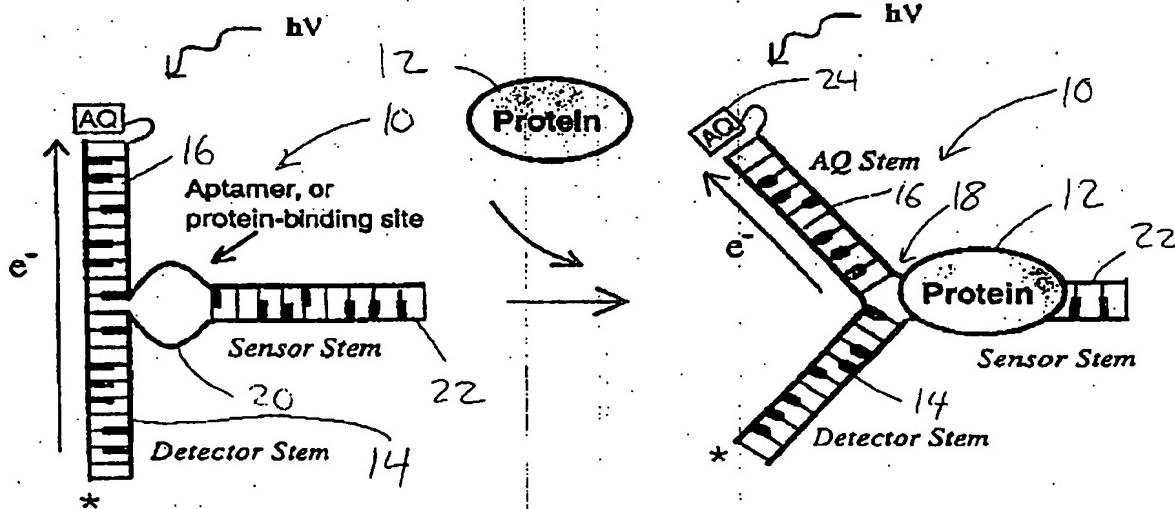
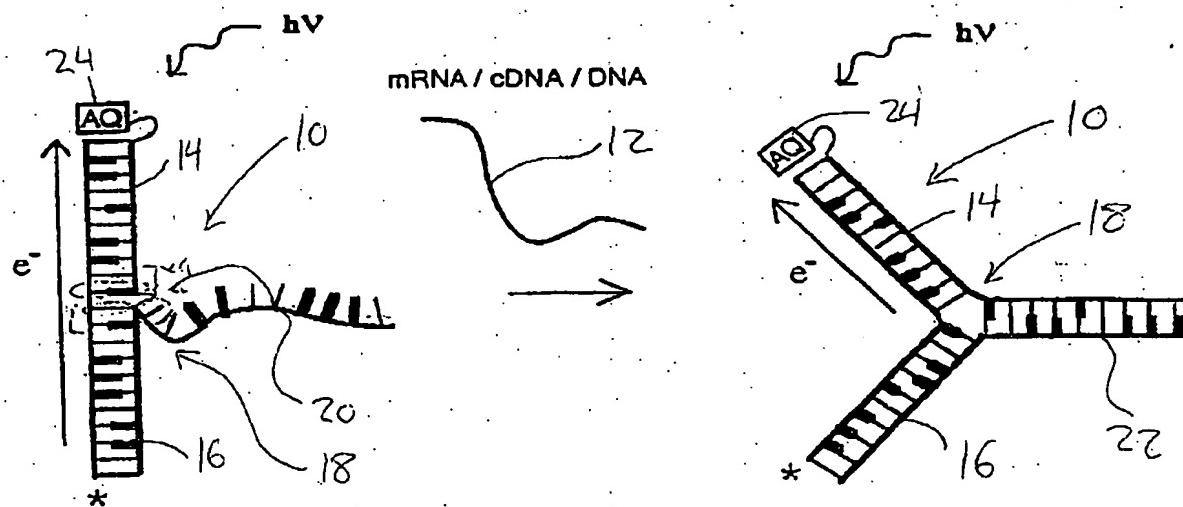


FIGURE 5

A sensor for detecting specific DNA or RNA oligonucleotides

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FIGURE 6
'AND' Gate

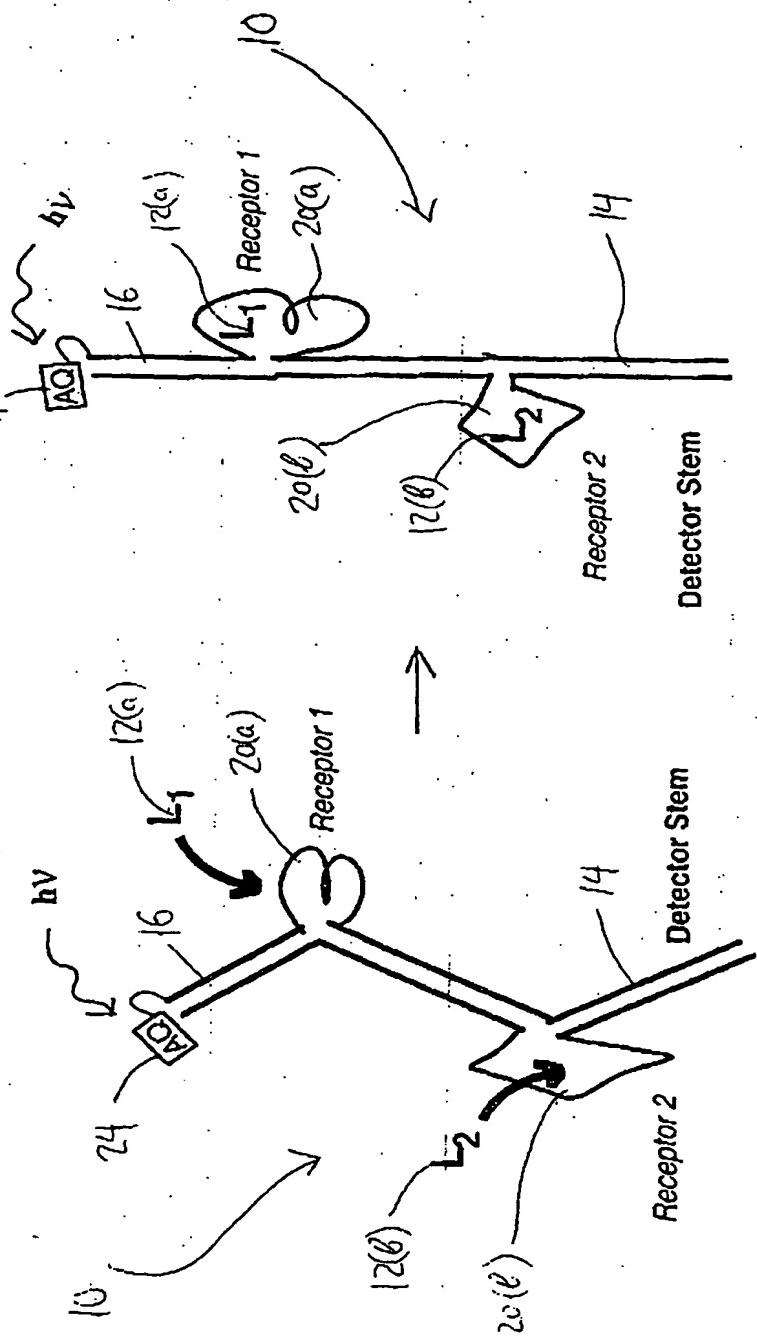
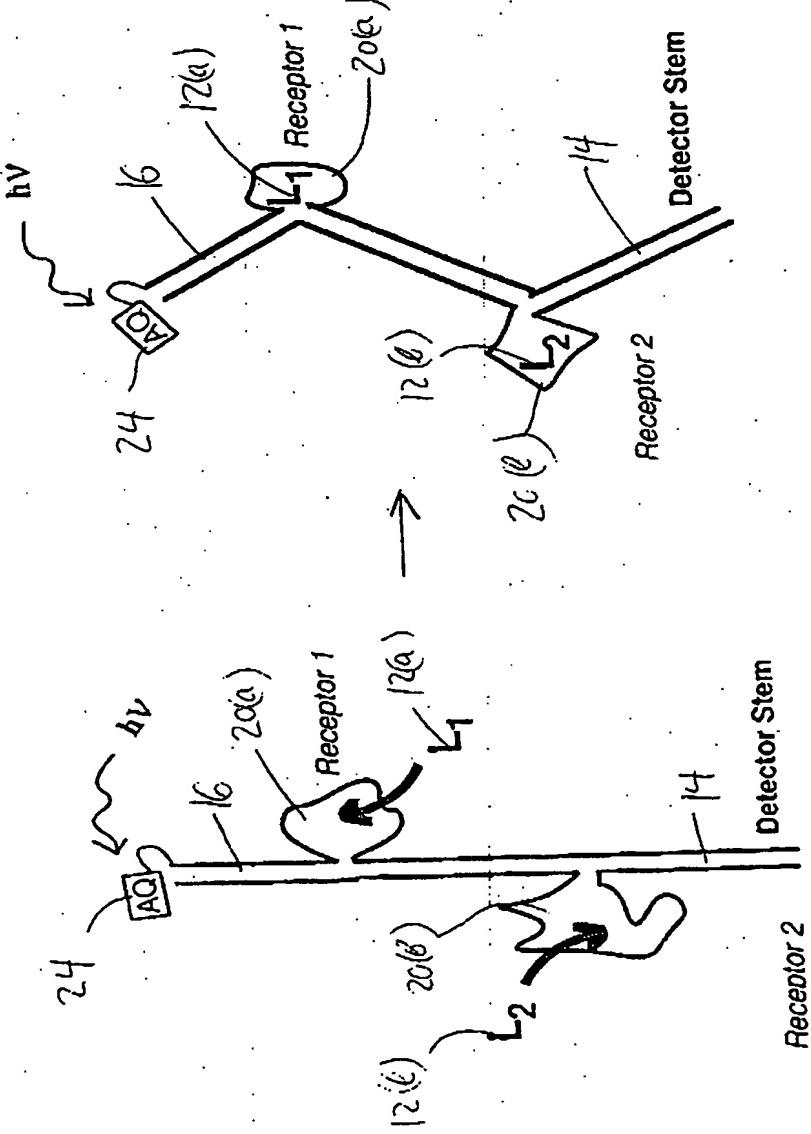


FIGURE 7
'NAND' Gate



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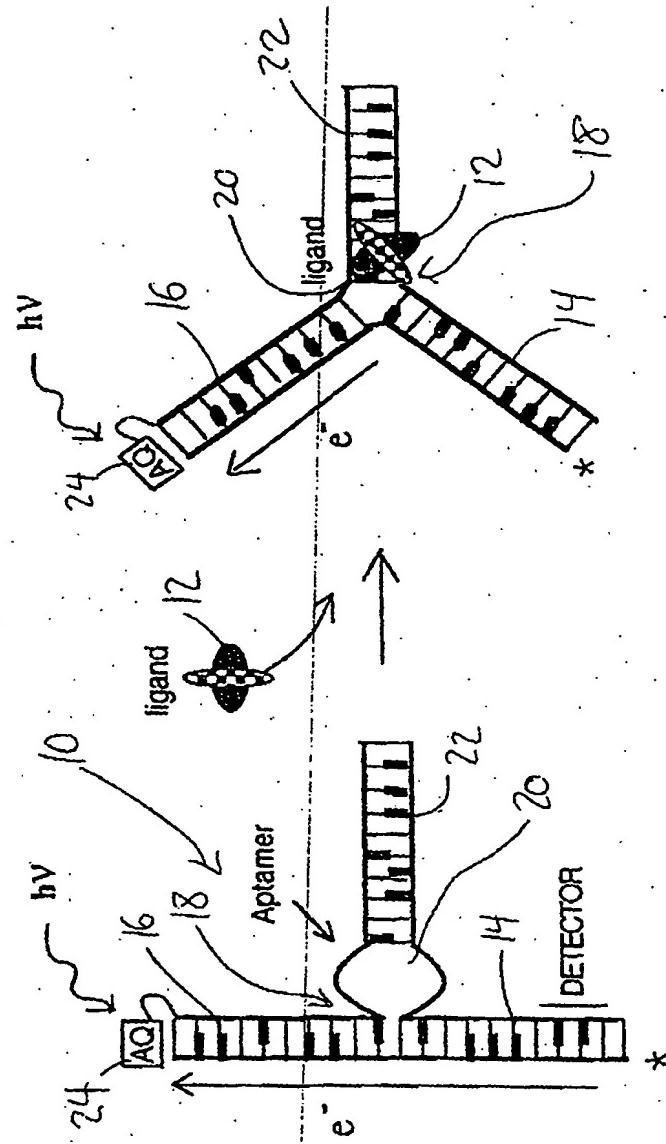
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FIGURE 8

OFF

ON



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FIGURE 9

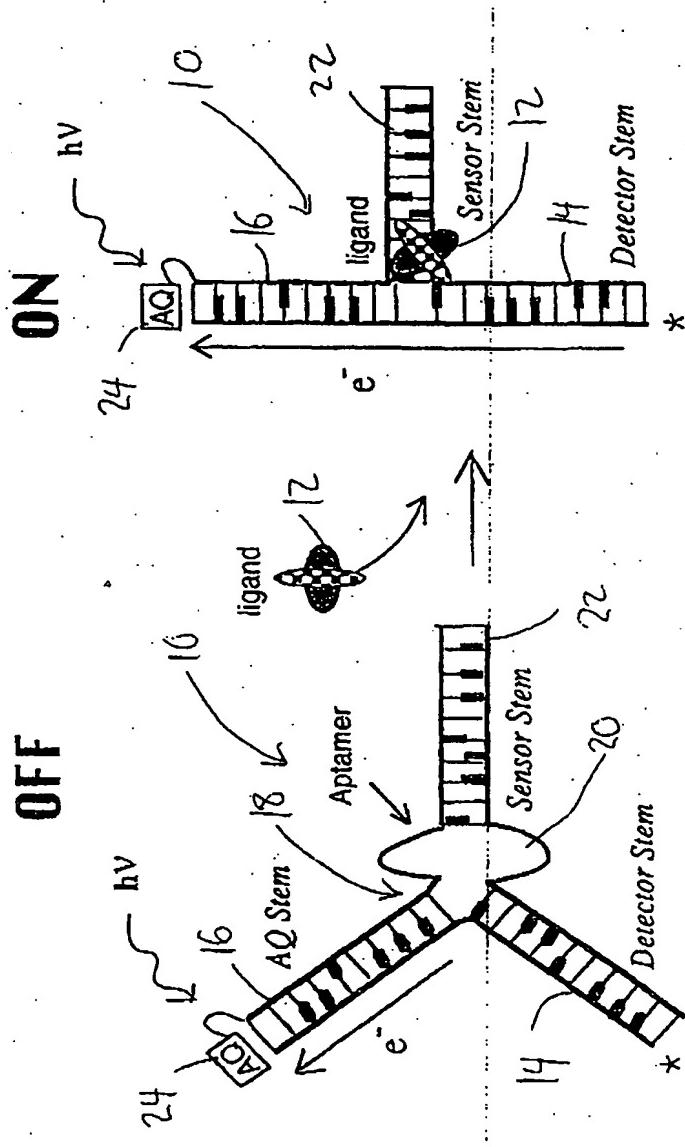


FIGURE 10

Direct in vitro Selection for Sensors of Proteins or Small Molecules

Clone after n rounds

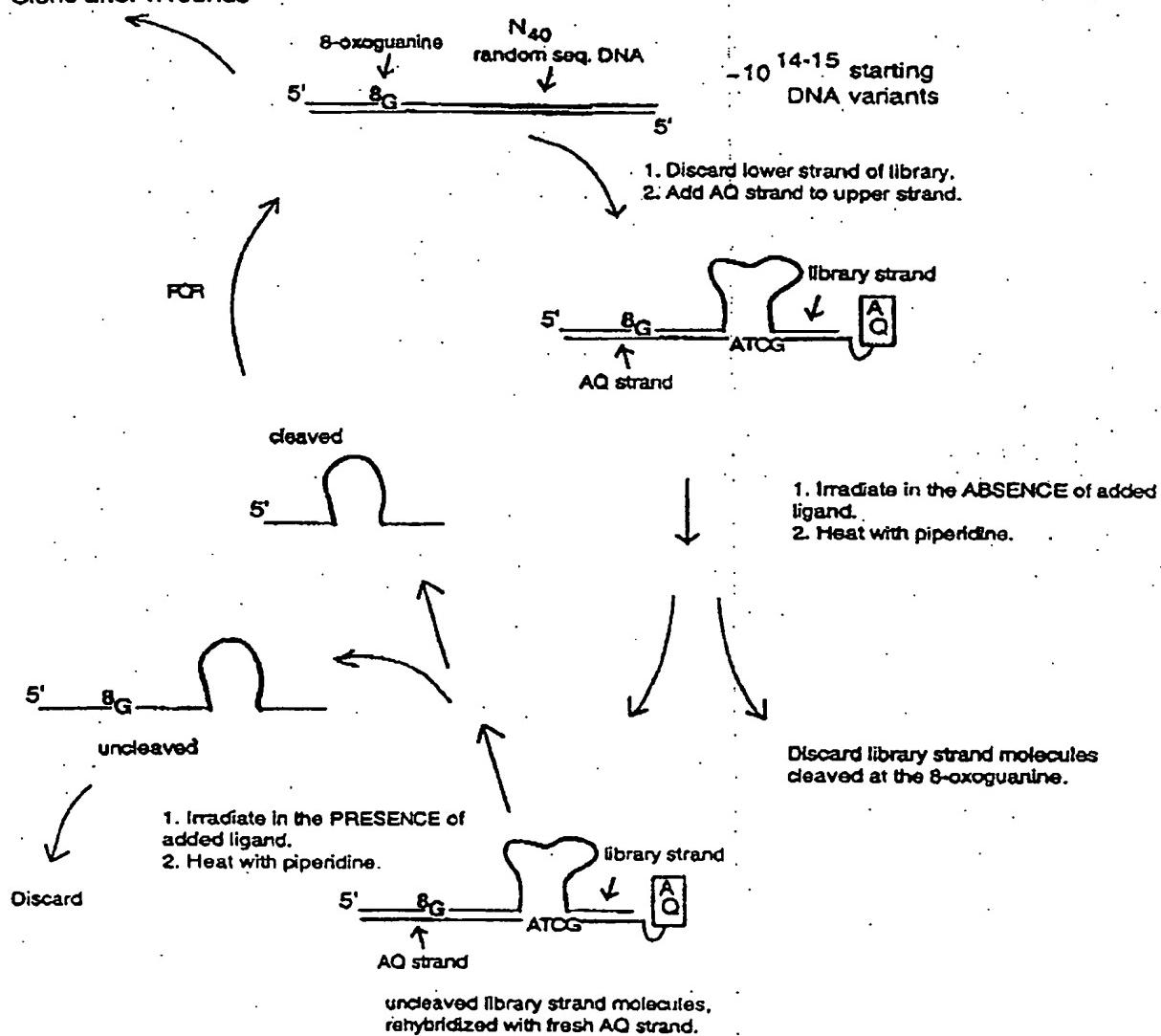
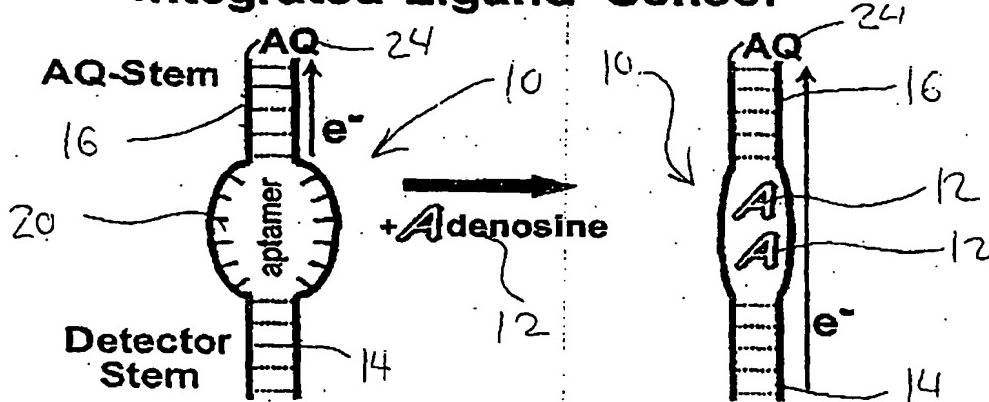
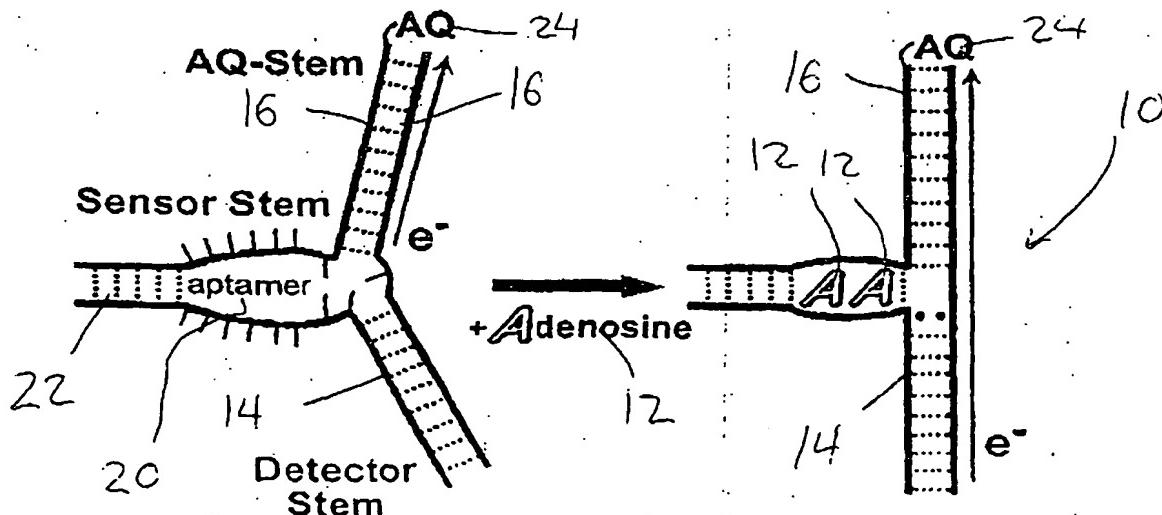
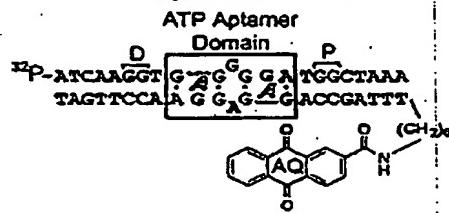


FIGURE 11**'OFF'****'ON'****Integrated-Ligand 'Sensor'****Coupled-Ligand 'Sensor'**

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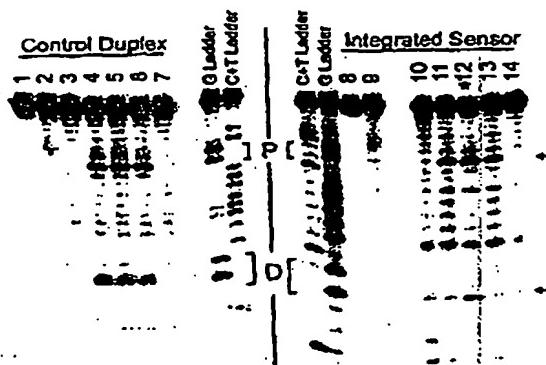
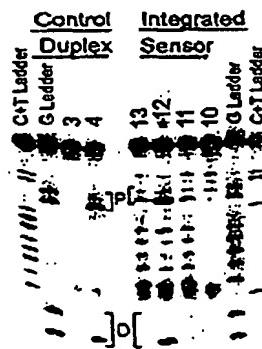
FIGURE 12Integrated SensorControl Duplex

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FIGURE 13(a)**FIGURE 13(b)**

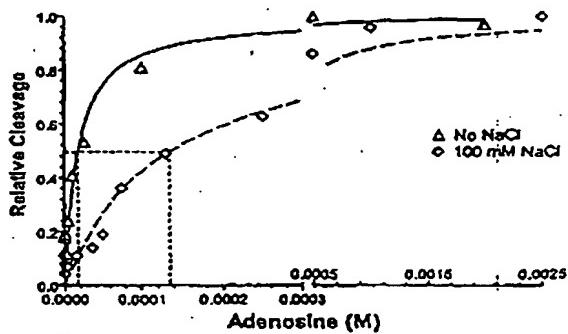
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FIGURE 14

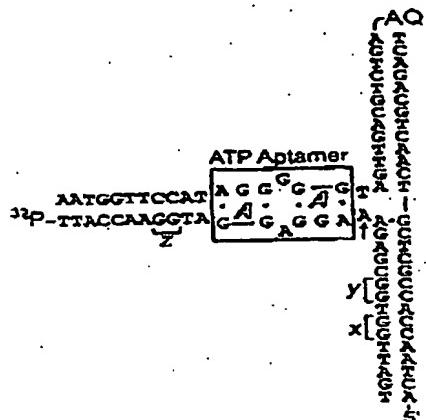
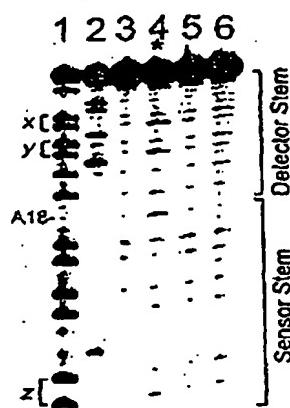


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FIGURE 15(a)**FIGURE 15(b)**

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